SOLICITATION NO. W911WN-05-B-0002

FABRICATION OF EMERGENCY BULKHEADS
EMSWORTH LOCKS AND DAM
PENNSYLVANIA

AMENDMENT

NUMBER 2

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AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0002	06/20/05	W81ET4-5119-3767	

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
US ARMY ENGR DISTRICT PGH WM S MOORHEAD FEDERAL BLDG, ROOM 2116 1000 LIBERTY AVENUE PITTSBURGH PA 15222-4186 George L. Kusko BR-C (412)395-7480		US ARMY ENGR DISTRICT PGH WM S MOORHEAD FEDERAL BLDG, ROOM 2116 1000 LIBERTY AVENUE PITTSBURGH PA 15222-4186	

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP code)*	(X)	9A. AMENDMENT OF SOLICITATION NO.
		W911WN-05-B-0002
	X	9B. DATED *(SEE ITEM 11)* 06/01/05
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED *(SEE ITEM 13)*
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [X] is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

SEE ATTACHED

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR _____ *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ *(Signature of Contracting Officer)*	16C. DATE SIGNED

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The following changes are made to the Specifications and Drawings for Fabrication of Emergency Bulkheads, Emsworth Locks and Dams, Ohio River, Pennsylvania:

The following specifications sections have been revised by Amendment No. 0002. Text revisions are indicated within the specification sections by overstrike (deletions) and underscore (additions).

Section B - Supplies or Services and Prices/Costs

Delete Page B-1 and substitute the attached revised page B-1.

Section C – Description/Specs/Work Statement

Section 01100 – General Requirements

Delete the Section and substitute the attached revised Section 01100.

Section 01151 – Special Project Procedures

Delete the Section and substitute the attached revised Section 01151. Insert the attached Schedule of Spillway Gate Operations at the end of Section 01151.

Section 01270 – Measurement and Payment

Delete the Section and substitute the attached revised Section 01270.

Submittal Register

Delete the Submittal Register and substitute the attached revised Submittal Register.

Section 01380 – Progress Photographs

Delete the Section and substitute the attached revised Section 01380.

Section 01451 – Contractor Quality Control

Delete pages SECTION 01451 PAGES 3 THRU 10 and substitute the attached revised pages 3 THRU 10.

Section 05502 – Metals: Miscellaneous, Standard Articles, Shop Fabricated Items

Delete pages SECTION 05502 PAGE 4 and 5 and substitute the attached revised pages 4 and 5.

Section 11295 – Bulkheads and Accessories

Delete the Section and substitute the attached revised Section 11295.

Drawings

Delete the following drawings and substitute the attached revised drawings:

Delete	Substitute
0-LEM-0/26	0-LEM-0/26.1
0-LEM-3/30	0-LEM-3/30.1
0-LEM-14/25	0-LEM-14/25.1
0-LEM-14/26	0-LEM-14/26.1
0-LEM-14/27	0-LEM-14/27.1
0-LEM-14/28	0-LEM-14/28.1
0-LEM-14/29	0-LEM-14/29.1
0-LEM-58/25	0-LEM-58/25.1
0-LEM-58/26	0-LEM-58/26.1
0-LEM-58/27	0-LEM-58/27.1
0-LEM-58/28	0-LEM-58/28.1
0-LEM-58/29	0-LEM-58/29.1
0-LEM-58/30	0-LEM-58/30.1
0-LEM-58/31	0-LEM-58/31.1
0-LEM-58/32	0-LEM-58/32.1
0-LEM-58/33	0-LEM-58/33.1
0-LEM-58/34	0-LEM-58/34.1
0-LEM-58/35	0-LEM-58/35.1
0-LEM-58/36	0-LEM-58/36.1
0-LEM-58/37	0-LEM-58/37.1
0-LEM-58/38	0-LEM-58/38.1
0-LEM-58/39	0-LEM-58/39.1
0-LEM-58/40	0-LEM-58/40.1
0-LEM-58/41	0-LEM-58/41.1
0-LEM-58/42	0-LEM-58/42.1
0-LEM-58/43	0-LEM-58/43.1

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

ITEM	DESCRIPTION	* QUANTITY	U/M	U/P	AMOUNT
	BASIC CONTRACT ITEMS				
0001	REIMBURSEMENT FOR ACTUAL PERFORMANCE AND PAYMENT BONDS PREMIUM, BASIC CONTRACT ITEMS			NOT TO EXCEED	$_____.____
0002	EMERGENCY BULKHEAD UNITS	4	EA	$_____.__	$_____.____
0003	POSITIONING BULKHEAD UNITS FOR OPERATIONAL TESTS	1	LS	SUM	$_____.____
0004	BULKHEAD LIFT BEAM	1	LS	SUM	$_____.____
	TOTAL, BASIC CONTRACT ITEMS, ITEMS 0001 THRU 0004 INCLUSIVE				$_____.____
	AWARDABLE OPTION ITEMS				
0005	REIMBURSEMENT FOR ACTUAL PERFORMANCE AND PAYMENT BONDS PREMIUM, AWARDABLE OPTION ITEMS			NOT TO EXCEED	$_____.____
0006	FIRST ADDITIONAL EMERGENCY BULKHEAD UNIT	1	EA	$_____.__	$_____.____
0007	SECOND ADDITIONAL EMERGENCY BULKHEAD UNIT	1	EA	$_____.__	$_____.____
0008	POSITIONING BULKHEAD UNITS FOR OPERATIONAL TESTS	1	LS	SUM	$_____.____
	TOTAL, AWARDABLE OPTION ITEMS, ITEMS 0005 THRU 0008 INCLUSIVE				$_____.____
	TOTAL, BASIC CONTRACT ITEMS AND AWARDABLE OPTION ITEMS, ITEMS 0001 THROUGH 0008				$_____.____

*ALL QUANTITIES ARE ESTIMATED, EXCEPT WHERE THE UNIT IS GIVEN AS"LS"

NOTE: ALL EXTENSIONS OF THE UNIT PRICES SHOWN WILL BE SUBJECT TO VERIFICATION BY THE GOVERNMENT.

PLEASE DO NOT ROUND OFF TOTALS. IN CASE OF VARIATION BETWEEN THE UNIT PRICE AND THE EXTENSION, THE UNIT PRICE WILL BE CONSIDERED TO BE THE BID. IF A MODIFICATION TO A BID BASED ON UNIT PRICES IS SUBMITTED, WHICH PROVIDES FOR A LUMP SUM ADJUSTMENT TO THE TOTAL ESTIMATED COST, THE APPLICATION OF THE LUMP SUM ADJUSTMENT TO EACH UNIT PRICE IN THE BID SCHEDULE MUST BE STATED. IF IT IS NOT STATED, THE BIDDER AGREES THAT THE LUMP SUM ADJUSTMENT SHALL BE APPLIED ON A PRORATA BASIS TO EVERY UNIT PRICE IN THE BID SCHEDULE.

THE FOLLOWING IS A LIST OF ABBREVIATIONS AND THEIR MEANINGS AS USED IN THE PRICE SCHEDULE UNDER U/M (UNIT OF MEASURE):

EA	EACH
LS	LUMP SUM

END OF SECTION B

Revised by Amendment 0002

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SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01100

GENERAL REQUIREMENTS

-- End of Section Table of Contents --

SECTION 01100

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

This section covers general requirements applicable to the performance of the work under this contract. These requirements are in addition to those specified in other sections of the contract.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety -- Safety and Health Requirements

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Propelling Unit Agreement; G

The written agreement between the Contractor and the lessor documenting the requirement for required propelling unit to be on site within the specified time limit shall be provided to the Contracting Officer prior to issuance of the Notice to Proceed.

Protection Plan; G

The Contractor's proposed protection methods shall be submitted for approval prior to commencing work. The plan shall include a description of materials, installation procedures, and inspection and repair methods.

SD-02 Shop Drawings

Bulkhead Lift Beam; G DO.

Detail drawings shall be provided for review and approval as specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS for the bulkheads. These drawings shall show complete details of the unit that identify the material, tolerances, connections, and welds.

1.4 WORK AREAS AND RESTRICTIONS

1.4.1 General

As required by Section 00700 CONTRACT CLAUSES, paragraph "OPERATIONS AND STORAGE AREAS", all operations of the Contractor shall be confined to areas shown on the drawings required to accomplish the work under this contract and as authorized and approved by the Contracting Officer. Delivery of the emergency bulkheads to the Emsworth Dam shall be via barge. Access to the dam bays for delivery is not available and not permitted via other modes of transportation. The Contractor shall coordinate delivery dates and times with the Contracting Officer, or his authorized representative.

1.4.2 WORK AREAS

The limits of the Contractor's work areas are limited to the Emsworth Dam's piers and the Ohio River as shown generally on the Contract Drawings. Prior to beginning any construction, the Contractor shall videotape on VHS format all existing structures including, but not limited to, Emsworth Dam emergency bulkhead delivery bay(s), and any other areas as directed by the Contracting Officer. If the Contractor proposes to haul materials or equipment by road to a remote work site, such hauling shall be in accordance with all permits, bonds and other requirements of the Pennsylvania Department of Transportation (and other states) and local authorities as applicable. No heavy or oversized hauling on public roads will be permitted until all permits and bonds have been obtained as required. The Contractor shall be responsible for investigating the load and dimensional limits for local roads. All damage to transportation facilities, public or private property, or utilities caused by the Contractor's operations shall be repaired to the satisfaction of the Contracting Officer at no additional cost to the Government. The Contractor's use of public roads shown on the drawings shall be in accordance with all permits, bonds and other requirements of the Commonwealth of Pennsylvania Department of Transportation, and all regulations, laws and ordinances of Allegheny County, PA. Likewise, if transportation of materials includes traveling in other states, counties or cities, then the Contractor's use of those roads shall be in accordance with all permits, bonds and other requirements of the particular state's Department of Transportation, and all regulations, laws and ordinances of the particular county and city. Dirt, mud and other materials and debris shall be removed, as necessary or as determined by the Contracting Officer, to prevent creation of a dust nuisance or safety hazard. Upon completion of all work requiring use of the local roads, the roadways shall be restored to their preconstruction condition by cleaning and or reconstruction of damaged drainage facilities, base courses, and pavements as necessary. Repairs shall be made in the same manner as the original construction. No separate payment will be made for maintaining and restoring the condition of the roads, and all costs in connection therewith shall be considered as incidental to performance of the work.

1.4.3 Other Contractors

The Contractor is alerted to the fact that other contractors may be employed by the Government at the site in connection with construction of the Stilling Basin rehabilitation.

1.4.4 Work and Storage Areas

Work areas at the site will be limited to the Emsworth Dam's piers and the Ohio River as generally indicated on the drawings and as authorized and approved by the Contracting Officer, and adjacent areas as required for performance of the work under this contract. No other areas will be made available at the project for storage of equipment and materials. Storage will not be permitted on the lock walls. Storage will not be permitted on the service bridge, or esplanade.

1.4.5 Public Use

The Contractor's attention is directed to the fact that the work to be performed is located in areas heavily used for river commercial traffic and recreational river traffic by the public. It shall be the responsibility of the Contractor to provide the controls necessary to prevent any interference by the public to his operations. The Government will cooperate with the Contractor in keeping the work areas clear so that the work may be performed with efficiency. The Contractor shall schedule his work to provide for these restrictions and all costs resulting therefrom shall be considered incidental to the costs of performing the work.

1.4.6 Utilities to be Furnished Without Charge

The Government will not make any utilities available to the Contractor.

1.5 WORK TO BE DONE BY OTHER AGENCIES

The existing handrails at the Emsworth Dam delivery bay piers will be removed and replaced by Government personnel.

1.6 DAMAGE TO WORK

The responsibility for damage to any part of the permanent work shall be as set forth in Section 00700 CONTRACT CLAUSES, paragraph "PERMITS AND RESPONSIBILITIES". However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood or earthquake, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment pursuant to the Section 00700 CONTRACT CLAUSES, paragraph "CHANGES", will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage.

1.7 PROTECTION OF UTILITIES

Notwithstanding the Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph "PROTECTION OF UTILITIES", and Section 00700 CONTRACT CLAUSES, paragraph "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS", the Contractor shall locate and clearly identify all

underground and above ground utility lines, wires, cables, pipes, poles, support lines, and culverts, within the Contractor's work area. The Contractor shall conduct his operations such that the utilities are not damaged or disturbed. Particular care shall be taken when working near the locks, dams, and gates. Any damage to utilities caused by the Contractor's actions shall be repaired by him at no additional expense to the Government. The Contractor shall store materials and equipment in a manner that does not interfere with utility company services or utility company access to the facilities. The Contractor shall relocate any equipment or stockpiles, at no additional cost to the Government, that interfere with utility operations, emergency repairs, or standard maintenance services.

1.8 OPERATION OF PROJECT FACILITIES

The project shall remain in operation at all times. The Contractor shall perform his work in a manner which will not interfere with the operation of the project facilities and the duties of Government personnel. Particular care shall be taken during all operations under this contract to prevent damage to any operating equipment or facilities at the project. The Contractor shall take all necessary precautions to ensure the safety of the workers in accordance with the applicable provisions of EM 385-1-1. Contractor operations shall be performed in such a manner to ensure that project personnel, navigation industry personnel and the public are protected at all times. The Contractor operations shall also be performed in such a manner to ensure that existing project facilities are protected from damage.

1.9 POOL LEVELS

The Government will not attempt to vary the pool levels for the convenience of the Contractor during the progress of the work. The Government will maintain the upper pool elevation at approximately El. 710.0 to within the limitations of the gate operating schedules. Lower pool elevation is dependent on flow in the river and will, in general, be as reflected on the Stage-Discharge relationships indicated in the Contract Drawings.

1.10 INSPECTIONS AND ACCEPTANCE OF WORK

Not withstanding other provisions of this contract, all materials and work to be performed under this contract shall be inspected and accepted by the Contracting Officer or his authorized representative(s). Inspections and acceptance will be performed on phases of the work, before the next definable sequential phase of work commences, OR may be performed at the completion of all of the work, as determined appropriate by the Contracting Officer. The Contracting Officer or his authorized representative shall be the individual(s) solely authorized to reject materials, disapprove or approve any work in progress, or order or direct any revision or change to the plans and specifications as presently shown and stated.

PART 2 PRODUCTS

2.1 PRODUCTS AND PARTS OF STANDARD MANUFACTURE

All materials, supplies and articles furnished so as to be incorporated into the work under this contract shall, whenever so specified and otherwise practicable, be standard products of recognized reputable manufacturers. Standard products of manufacturers other than those specified will be accepted when it is proven to the satisfaction of the Contracting Officer, in accordance with the Section 00700 CONTRACT CLAUSES,

paragraph "MATERIAL AND WORKMANSHIP", that they are equal in performance, strength, durability, usefulness and convenience for the purpose intended. Any changes required in the details and dimensions shown on the drawings as a result of the substitution of standard products, other than those provided for, shall be properly made as approved by the Contracting Officer, and at the expense of the Contractor. All products specified by "similar or equal to" a particular brand name are for descriptive purposes only and are not to imply that the product is available from only that source.

PART 3 EXECUTION

3.1 SEQUENCE OF WORK

The work shall be prosecuted in such order of precedence as best suits the Contractor's construction schedule and the following restrictions. The Contractor shall perform the work in a diligent, effective manner, and shall schedule his operations in such a manner that the work is completed on time. In accordance with Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph "LIQUIDATED DAMAGES --CONSTRUCTION", the Contractor will be assessed the daily monetary damages for failure to complete the work in the allotted contract period. The Contractor shall deliver the emergency bulkheads via barge to the project site, aligning the centerline of the lifting assemblies with the centerline of the existing overhead monorail crane, to be lifted by the existing overhead monorail crane. The Government will utilize the monorail crane to lift and test the emergency bulkheads. After acceptance by the Government, the Contractor shall deliver two (2) selected emergency bulkheads via barge to

Pittsburgh Engineering Warehouse and Repair Station (PEWARS)
U.S. Army Corps of Engineers
3508 Grand Avenue
Pittsburgh, Pennsylvania 15225-1510

The Government will utilize existing hoist equipment at PEWARS to remove the selected emergency bulkheads from the barge. The Contractor shall provide a lift (spreader) beam for lifting the bulkheads at PEWARS. The lift beam shall have sufficient length such that vertical connections can be made from the lifting assemblies.

3.2 PRECONSTRUCTION SURVEY

Notwithstanding other Contract Clauses or Special Contract Requirements, the Contractor shall not begin installation construction until he has thoroughly documented the conditions at the site prior to installation construction. Documentation shall include, but not be limited to photographs taken prior to construction, as required in Section 01380 PROGRESS PHOTOGRAPHS, and VHS format videotape which clearly shows the condition of the site prior to construction. Particular photographic detail shall be directed to the condition of existing locks, dams, and gates. Municipal and private property which are adjacent to the proposed work. All videotapes shall be labeled to clearly identify the location and date at which the videotape was made. No separate payment will be made for videotaping, and all costs in connection therewith shall be considered as a subsidiary obligation of the Contractor.

3.3 TESTING

Where testing is specified herein to be performed by the Government, the

Government will perform the testing or will have the testing performed at a commercial laboratory at the expense of the Government. Where items or additional samples from items which have been previously tested and approved at the expense of the Government are required to be retested, the Government will bear the costs of such retesting. Where retesting is required because of the failure of previously tested samples, the expenses of all such retesting shall be borne by the Contractor at no extra expense to the Government. The Contractor shall pay for all additional retesting required due to subsequent test failures. Where so required for original testing, retesting will be performed either in the Government laboratories or at such commercial laboratories as may be approved by the Contracting Officer.

3.4 RECORDS AND REPORTS

All records, test reports and similar documentation produced in connection with quality control operations shall be promptly submitted to the Contracting Officer or his authorized representative as required by the specifications. The Contractor shall develop and submit 5 copies of the Protection Plan for construction Safety.

3.5 IDENTIFICATION OF EMPLOYEES

The Contractor shall be responsible for furnishing an identification badge/card to each employee prior to the employee working on-site and for requiring each employee engaged on the work to display identification. Identification shall consist of name tags with the name of the Contractor and the employee's name. All prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon the release of any employee.

3.6 PROPELLING UNIT AGREEMENT

Floating plant, and the operation of such plant, shall comply with the requirements of EM 385-1-1, Section 19. Floating plant which is being used in the contract work shall be secured in the gate bay in which work is being performed. An emergency plan for removing or securing floating plant and evacuating personnel in the event of severe weather shall be prepared in accordance with EM 385-1-1, Section 19.A.03. The Contractor shall provide personnel on a 24 hour per day basis to adjust moorings to provide for fluctuations of pool level. A propelling unit capable of moving the floating plant must be available at all times. If the Contractor chooses to have a leased tow boat or propelling unit off-site, the plant must be capable of being on-site within 4 hours notice. The written agreement between the Contractor and the lessor documenting this requirement shall be provided to the Contracting Officer prior to issuance of the Notice to Proceed. The agreement shall also include documentation that the propelling unit operator currently possesses a U.S. Coast Guard First Class Pilot's license. The Contractor shall obtain and submit 5 copies of the Propelling Unit Agreement between the Contractor and the tow company prior to issuance of the Notice to Proceed.

3.7 SIGNAL LIGHTS

The Contractor shall display signal lights and conduct his operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, and day signals to be displayed by vessels of more than 65 feet in length moored or

anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant, U.S. Coast Guard Instruction M16672.2 or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 809 (inland) as applicable.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01151

SPECIAL PROJECT PROCEDURES

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SECTION 01151

SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE EM-385-1-1	(2003) Safety -- Safety and Health Requirements

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Delivery and Positioning Plan; G, DO

A plan describing in detail the proposed methods of delivery and positioning of the bulkhead units. The plan shall address equipment, machinery and site limitations identified in the specifications and discussed at the pre-delivery meeting. The plan shall be submitted at least 60 calendars prior to proposed delivery of any bulkhead units. The plan shall include, but not be limited to the following:

a. Type and size of barge(s) to be used for delivery

b. Propelling unit to be used for delivery

c. Location and description of intermediate assembly or handling areas (if any) between the fabrication location and the delivery location.

d. Equipment and materials to be utilized in positioning the individual bulkhead units for pickup by the Government monorail bulkhead hoist and for repositioning bulkhead units to be delivered to PEWARS.

e. Positioning of bulkhead units to be delivered to PEWARS on the barge(s).

Additional submittal requirements related to delivery and positioning may be specified in other sections.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 POSITIONING FOR ACCEPTANCE TRIAL OPERATION

3.1.1 General

The Contractor shall be responsible for delivering all of the bulkhead units on barge(s) to a designated gate bay upstream of the Emsworth Main Channel Dam. The Contractor shall position each bulkhead unit in the gate bay for pickup by the Government monorail bulkhead hoist and test operation in the bulkhead slot. Test operation will be performed by the Government in accordance with Section 11295 BULKHEADS AND APPURTENANCES, paragraph "Acceptance Trial Operation".

3.1.2 Government Services

The Government will provide the following services in connection with acceptance trial operation:

Remove and replace aluminum handrail at the bulkhead dogging level of the dam piers for the gate bay in which the bulkhead unit is to be operated.

Position the monorail bulkhead hoist.

Attach the lifting beam to the bulkhead unit.

Raise the bulkhead unit from its position under the monorail bulkhead hoist.

Position and lower the bulkhead unit in the bulkhead slot.

Raise and lower the bulkhead unit as necessary to demonstrate proper operation and sealing.

Return the bulkhead unit to the original pickup location as necessary for indicated repairs or adjustments. Any additional movement, beyond the original pickup position, required for performing repairs or adjustments shall be the responsibility of the Contractor.

Move bulkhead unit that are to remain at the project to a dogged position in another gate bay or place it back in the original pickup position for repositioning and delivery to PEWARS as applicable.

Move bulkhead unit that are to be delivered to PEWARS to the original pickup position for repositioning and delivery to PEWARS as applicable.

Unload the two bulkhead units upon arrival at PEWARS.

Only Government personnel will operate the monorail bulkhead hoist.

3.1.3 Contractor Responsibility

The Contract shall provide the following services in connection with delivery and trial operation:

Deliver all of the bulkhead units to the upstream face of the dam at

the designated gate bay on barge(s).

Raise and position each bulkhead unit to a position within the gate bay that will permit attaching of the lifting beam by the Government.

Make repairs and adjustments as required to place the bulkhead unit in compliance with the specification requirements, including removal from or repositioning in the gate bay.

Receive the two bulkhead units to be delivered to PEWARS on the Contractor's barges.

Secure the two bulkhead units and deliver to PEWARS as specified in Section F DELIVERIES AND PERFORMANCE, clause 52.211-4001 Place Of Delivery.

3.2 BULKHEAD UNIT POSITIONING AT GATE BAY UPSTREAM OF THE MAIN CHANNEL DAM

3.2.1 General

The Contractor is advised that the placement of a bulkhead unit is a difficult task that will be supported by the Government. The support by the Government will be limited by the existing equipment and machinery at the Main Channel Dam. This equipment and machinery has load limitation, reach limitation, pick-up point limitation, and other limitations due to the characteristics of the site.

The Contractor shall be solely responsible for meeting all of the constraints and limitations of the Government equipment, machinery, and structure.

3.2.2 Pre-Delivery Coordination

The Contractor shall meet with the Government representative to be briefed on the limitations of the Government support. The Contractor shall submit a delivery and positioning plan addressing the limitations established by the Government and the field visit and briefing. The delivery and positioning plan will be reviewed by the Government and the Government reserves the right to revise and/or alter the Contractor's delivery and positioning plan.

3.2.3 Facility and Equipment Limitations

The Government equipment and facility limitations associated with the trial operation of the bulkhead units include, but may not be limited to, the following:

1. The monorail bulkhead hoist working load limit is 20 tons.

2. Geometric constraints due to pier configuration and bulkhead recess location prevent the direct installation of the bulkhead units. The bulkhead units will need to be elevated, moved, and rotated into position within the confines of the existing piers, landings, and recesses without any demolition work.

This is NOT a complete list of limitations, and the Government does not warrant and/or guarantee that a Contractor's plan that addresses these limitations would be sufficient to accomplish the installation of the bulkhead units.

3.2.4 Additional Submittal Requirements

In addition to the submittals required by this section, the Contractor is alerted to the following related submittals specified in other sections of the contract documents related to the work at the delivery site.

a. Insurance Certificates for work at delivery site in accordance with Section H, SPECIAL CONTRACT REQUIREMENTS, clause "52.228-4003 Required Insurance" and Section I, CONTRACT CLAUSES clause "52.228-5 Insurance - Work on A Government Installation.

b. Propelling Unit Agreement for propelling units used for delivery of the bulkhead units in accordance with Section 01100 GENERAL REQUIREMENTS.

c. Protection Plan for protection of existing structure and equipment in accordance with Section 01100 GENERAL REQUIREMENTS.

d. Crane Critical Lift Plan that addresses all of the Safety and Lifting Requirements of COE EM-385-1-1, as well as the limitations of the Government equipment, machinery, and dam structure in accordance with Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS.

e. Accident Prevention Plan, Activity Hazard Analysis (AHA), Crane Work Plan, and Proof of qualification for Crane Operators in accordance with Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS.

3.3 RIVER CONDITIONS

3.3.1 General

Access to the dam for delivery, positioning, and removal of the bulkhead units and working conditions at the site will be dependent upon river conditions. It shall be the Contractor's responsibility to monitor National Weather Service river forecasts to determine anticipated conditions at the site. The Contractor shall monitor the prevailing river conditions at the project site, referring to the upstream project river gage, river forecasts issued by the National Weather Service, and the Corps of Engineers River Forecast System, and shall determine when to withdraw floating plant. The Contractor shall not move floating plant into position at the dam when river conditions are forecast to be adverse within the anticipated period of work at the site. Movement of equipment and floating plant into position, and withdrawal of equipment and floating plant shall be the Contractor's decision and will not be directed by the Government. It shall be the Contractor's responsibility to determine the time necessary to make a complete and safe withdrawal of equipment and floating plant with due consideration given to the location of mooring area; amount of equipment; size of the floating plant, and capacity of towboats to operate safely and efficiently at the expected river conditions.

3.3.2 Gate Operating Schedule

The Gate Operating Schedule dated May 1992, attached at the end of this section, governs usual gate movements by the Government at Emsworth Locks and Dams. The number of gates open and the openings apply under current conditions, however, the Government may operate different individual gates than shown on the Gate Operating Schedule to account for gates being out of service and the work being performed under this Contract. This schedule is

the basis for providing acceptable downstream turbulence levels to avoid loss of erosion protection, and to maintain customary river stages at Pittsburgh. Certain departures from the schedule have been shown to cause stone flutter and loss of riprap in the model tests of 1981 and 2005 performed by the Engineer Research and Development Center. To aid in positioning the bulkhead units, it will be necessary to close the gate bays on both sides of any area being worked on at any given time. To accomplish the work, certain deviations from the gate operating schedule may be authorized. A maximum of three gate bays may be closed to accomplish the work under this contract for river discharges up to a maximum of 64,700 cfs (47 feet dam opening). If turbulence adjacent to closed gate bays is excessive during positioning and trial operation of the bulkhead units, it may be necessary to restrict the openings of gates adjacent to the closed gates to a maximum of 1 foot. All gate operations will be performed by the Government. The Contractor shall make request for gate operations through the Contracting Officer's representative, and shall be responsible for scheduling his operations to comply with the gate operating schedule and any approved deviations.

3.3.3 Mooring of Floating Plant

The Contractor shall be responsible for all mooring of floating plant. When not in use, the Contractor's floating plant shall be securely moored. The Contractor shall also be solely responsible for providing personnel in order to adjust mooring lines as required by the prevailing river conditions. Floating plant shall be completely removed and secured away from the dam before the river discharge reaches 64,700 cfs (47 feet dam opening) or within two hours notice from the Contracting Officer or Lockmaster for other conditions that may require operation of the dam gates.

3.3.4 Withdrawal of Equipment and Floating Plant

Movement of equipment and floating plant into position, and withdrawal of equipment and floating plant shall be the Contractor's decision and will not be directed by the Government. The following information is provided for the Contractor's guidance in making these decisions. Navigational restrictions require that all river traffic through Emsworth Locks and Dams be suspended when the river level reaches El. 716.0 (Project Upper Gage = 22.0 feet). All marine work at the project site shall also be suspended when the river level is at this stage. The Contractor's floating plant shall be moored away from the project site by the time the river discharge reaches 64,700 cfs (47 feet dam opening) All floating plant and equipment shall remain securely moored during the period when river discharges are at or above 64,700 cfs (47 feet dam opening). The Contractor shall also be responsible for providing personnel during the suspension to adjust mooring lines as required by the prevailing river conditions. The Contractor may resume all work, and remobilize equipment and floating plant from its moored location when the river discharge reaches 64,700 cfs (47 feet dam opening) with a falling condition forecast.

3.3.5 Compensation and Extension of Contract Period, Suspension of Work

The withdrawal of floating plant and equipment is considered an incidental condition of work dictated by the nature of the work site. The Contractor's withdrawal of equipment and floating plant shall not be construed as a direction on the part of the Government or Contracting Officer, under the provisions of Section I CONTRACT CLAUSES, paragraph "SUSPENSION OF WORK," which clause shall not apply to this work condition. No compensation will be made to the Contractor for withdrawal of this

equipment nor will any delay costs be made for the period during which work is suspended. In accordance with Section I CONTRACT CLAUSES, paragraph "DEFAULT (FIXED-PRICE SUPPLY AND SERVICE)," the contract period will be extended equitably for the withdrawal of floating plant and equipment.

3.3.6 Operation of Small Water Craft

The Contractor shall develop, prepare and submit a plan addressing the operation of small water craft within the "restricted area" of the Emsworth Locks and Dams project. The "restricted area" includes all areas riverward of the river wall and extends from the upstream end of the upper guard wall to the downstream end of the lower guard wall. The plan shall address safe operations of small water craft and shall include; maximum river stages, maximum river flows, horsepower requirements, training, and any other items necessary to address all the hazards associated with navigating in the "restricted area" of a navigation dam.

-- End of Section --

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EMSWORTH LOCKS AND DAMS

SCHEDULE OF SPILLWAY GATE OPERATIONS

DISCHARGE [CFS]	LOWER POOL GAGE [FT]	MAIN CHANNEL 1	2	3	4	5	6	7	8	BACK CHANNEL 9	10	11	12	13	14		TOTAL FEET OPEN [FT]	UPPER POOL ELEVATION [FT NGVD]
100	12.1	←						CLOSED		→							0.0	710.6
1700	12.6								0						1		1.0	710.6
3200	12.9								1	0					1		2.0	710.6
4800	13.1					0			1	1					1		3.0	710.6
6400	13.3				0	1			1	1					1		4.0	710.6
8100	13.5			1	1	1	0		1	1					1		5.0	710.6
9700	13.7			0	1	1	1		1	1					1		6.0	710.6
11300	13.8			1	1	1	1		1	1			0		1		7.0	710.6
12900	14.0			1	1	1	1		1	1		0	1		1		8.0	710.6
14500	14.1			1	1	1	1		1	1		1	1	0	1		9.0	710.6
16100	14.3			1	1	1	1		1	1	0	1	1	1	1		10.0	710.6
17700	14.4			1	1	1	1	0	1	1	1	1	1	1	1		11.0	710.6
19300	14.6		0	1	1	1	1	1	1	1	1	1	1	1	1		12.0	710.6
20900	14.7	0	1	1	1	1	1	1	1	1	1	1	1	1	1		13.0	710.6
22500	14.8	1	1	1	1	1	1	1	1	1	1	1	1	1	1		14.0	710.6
24800	15.0	1	1	1	1	2.5	1	1	1	1	1	1	1	1	1		15.5	710.6
27000	15.2	1	1	1	2.5	2.5	1	1	1	1	1	1	1	1	1		17.0	710.5
29400	15.3	1	1	1	2.5	2.5	2.5	1	1	1	1	1	1	1	1		18.5	710.5
31600	15.5	1	1	2.5	2.5	2.5	2.5	1	1	1	1	1	1	1	1		20.0	710.4
33900	15.6	1	1	2.5	2.5	2.5	2.5	1	1	1	1	1	2.5	1	1		21.5	710.4
35900	15.8	1	1	2.5	2.5	2.5	2.5	1	1	1	1	2.5	2.5	1	1		23.0	710.3
38200	15.9	1	1	2.5	2.5	2.5	2.5	1	1	1	1	2.5	2.5	2.5	1		24.5	710.3
40300	16.1	1	1	2.5	2.5	2.5	2.5	1	1	1	2.5	2.5	2.5	2.5	1		26.0	710.2
42400	16.2	1	1	2.5	2.5	2.5	2.5	1	1	1	2.5	2.5	2.5	2.5	2.5		27.5	710.2
44500	16.4	1	1	2.5	2.5	2.5	2.5	1	1	2.5	2.5	2.5	2.5	2.5	2.5		29.0	710.1
46500	16.5	1	1	2.5	2.5	2.5	2.5	2.5	1	2.5	2.5	2.5	2.5	2.5	2.5		30.5	710.0
48600	16.7	1	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		32.0	710.0
51500	16.9	1	1	2.5	2.5	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		34.5	709.8
54300	17.1	1	1	2.5	5	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		37.0	709.7
57100	17.3	1	1	2.5	5	5	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		39.5	709.6
59800	17.5	1	1	2.5	5	5	5	2.5	2.5	2.5	2.5	2.5	5	2.5	2.5		42.0	709.5
62400	17.7	1	1	2.5	5	5	5	2.5	2.5	2.5	2.5	5	5	2.5	2.5		44.5	709.4
64700	17.9	1	1	2.5	5	5	5	2.5	2.5	2.5	2.5	5	5	5	2.5		47.0	709.3
66700	18.1	1	1	2.5	5	5	5	2.5	2.5	2.5	5	5	5	5	2.5		49.5	709.1
68700	18.2	1	1	2.5	5	5	5	2.5	2.5	2.5	5	5	5	5	5		52.0	709.0
70800	18.3	1	1	2.5	5	5	5	2.5	2.5	5	5	5	5	5	5		54.5	708.9
72000	18.4	1	1	2.5	5	5	5	5	2.5	5	5	5	5	5	5		57.0	708.8
74300	18.5	1	1	2.5	5	5	5	5	5	5	5	5	5	5	5		59.5	708.7
77600	18.8 **	2.5	2.5	2.5	5	5	5	5	5	5	5	5	5	5	5		62.5	708.6
79700	18.9	2.5	2.5	5	5	5	5	5	5	5	5	5	5	5	5		65.0	708.5
81900	19.0	2.5	2.5	5	5	5	5	5	5	5	5	7.5	7.5	5	5	*	70.0	708.4
82900	19.1	2.5	2.5	5	5	5	5	5	5	5	5	7.5	7.5	7.5	7.5		75.0	708.2
84500	19.2	2.5	2.5	5	5	5	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5		80.0	708.1
87400	19.4	2.5	2.5	5	5	7.5	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5		82.5	708.1
89000	19.5	2.5	2.5	5	5	7.5	7.5	5	5	7.5	7.5	7.5	7.5	7.5	7.5		85.0	708.0
91800	19.7	2.5	2.5	5	5	7.5	7.5	7.5	5	7.5	7.5	7.5	7.5	7.5	7.5		87.5	708.0
94600	19.9	2.5	2.5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		90.0	708.0
96000	20.0	2.5	2.5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		92.5	707.9
100200	20.2	2.5	2.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		95.0	708.0
108300	20.8	2.5	2.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	#	95.0	708.5
116700	21.4	2.5	2.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		95.0	709.0
125600	22.0	2.5	2.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		95.0	709.5
132900	22.6	2.5	2.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		95.0	709.9
137900	23.0	2.5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		97.5	710.0
141200	23.2	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		100.0	710.0
146100	23.6	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		102.5	710.0
151000	24.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5		105.0	710.0
153200	24.2	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	#	105.0	710.1

NOTES:

Figures shown below gate numbers represent feet of opening above spillway crest elevation 698 FT NGVD (F = FULLY OPEN)

Any step may be made in progressive parts for closer control of flow.

** Do not open any gate FULL unless lower gage equals or exceeds 18.8 FT. Minimum permissible lower gage for other openings is as follows:

1 FT - No limit	2.5 FT - 14.0 FT	4 FT - 15.6 FT	5.5 FT - 17.1 FT	7 FT - 18.4 FT
1.5 FT - 12.9 FT	3 FT - 14.5 FT	4.5 FT - 16.1 FT	6 FT - 17.5 FT	FULL - 18.8 FT
2 FT - 13.4 FT	3.5 FT - 15.1 FT	5 FT - 16.6 FT	6.5 FT - 18.0 FT	

* Gates fully open have been assigned a nominal value of 7.5 FT but vary with actual upper pool elevation in each channel.

Upper pool elevations in both channels drop below 710 FT NGVD for prolonged periods between discharges of approximately 50000 - 138000 CFS due to "rocking" procedure presently in use to maintain lower stages at Pittsburgh. This procedure is contained in

Rising of "rocked" pool increases discharge for same opening.

Gage datums are: Emsworth lower pool = 680.0 FT NGVD Pittsburgh = 694.2 FT NGVD
upper pool = 694.0 FT NGVD

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SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01270

MEASUREMENT AND PAYMENT

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Weight Certificates

Submit certified weight certificates for emergency bulkhead units.

1.2 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.2.1 Positioning Bulkhead Units for Operational Tests

1.2.1.1 Payment

Payment will be made for costs associated with positioning the bulkheads in a gate bay at the Main Channel Dam, as defined in Section 01051 SPECIAL PROJECT PROCEDURES.

1.2.1.2 Unit of Measure

Unit of measure: lump sum.

1.2.2 Bulkhead Lift Beam

1.2.2.1 Payment

Payment will be made for costs associated with furnishing and delivering the bulkhead lift beam, as specified in Section 01100 GENERAL REQUIREMENTS.

1.2.2.2 Unit of Measure

Unit of measure: lump sum.

1.3 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.3.1 Emergency Bulkhead Units

1.3.1.1 Payment

Payment will be made for costs associated with operations necessary for fabrication and delivery of the emergency bulkhead units. Provide weight certificates indicating weight(s) of assembled emergency bulkhead units.

1.3.1.2 Measurement

Measurement will be based on the number of emergency bulkhead units delivered and accepted as specified.

1.3.1.3 Unit of Measure

Unit of measure: each.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

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SUBMITTAL REGISTER

CONTRACT NO.
W911WN-05-B-0002

TITLE AND LOCATION
Design of Emergency Bulkheads, Emsworth Dam, Ohio River

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01100	SD-01 Preconstruction Submittals															
			Propelling Unit Agreement	3.6	G													
			Protection Plan	3.4	G													
			SD-02 Shop Drawings															
			Bulkhead Lift Beam		G	DO												
		01151	SD-01 Preconstruction Submittals															
			Delivery and Positioning Plan	3.2.2	G	DO												
		01270	SD-03 Product Data															
			Weight Certificates															
		01380	SD-11 Closeout Submittals															
			Thumbnail Hard Copy Prints of	3.1	G	RE												
			Progress Images															
			Glossy Prints of Selected Official	3.1	G	RE												
			Progress Images															
			Electronic Copy of Selected	3.1	G	RE												
			Official Progress Images															
			Electronic Copy of All Other	3.1	G	RE												
			Progress Images															
		01525	SD-01 Preconstruction Submittals															
			Accident Prevention Plan (APP)	1.8	G													
			Activity Hazard Analysis (AHA)	1.9	G													
			Crane Critical Lift Plan	1.8.1	G													
			Crane Work Plan	1.8.1	G													
			Proof of qualification	3.4.3	G													
			SD-06 Test Reports															
			Reports	1.13														

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CONTRACT NO.
W911WN-05-B-0002

TITLE AND LOCATION
Design of Emergency Bulkheads, Emsworth Dam, Ohio River

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01525	Accident Reports	1.13.1														
			Monthly Exposure Reports	1.13.3														
			Regulatory Citations and	1.13.4														
			Violations															
			Crane Reports	1.13.5														
			SD-07 Certificates															
			Certificate of Compliance	1.13.6														
		01780	SD-02 Shop Drawings															
			As-Built Drawings	1.2.1	G	RE												
			SD-03 Product Data															
			As-Built Record of Equipment and	1.2.2	G	RE												
			Materials															
			SD-10 Operation and Maintenance															
			Data															
			Operation and Maintenance	1.3	G	RE												
			Manual															
		05055	SD-02 Shop Drawings															
			Detail Drawings	1.3	G	DO												
			SD-03 Product Data															
			Welding of Structural Stainless	2.2.2.1	G	DO												
			Steel															
			Welding of Aluminum	2.2.2.2	G	DO												
			Structural Stainless Steel Welding	2.3.5														
			Repairs															
			Bolts, Nuts, & Washers	2.2.3.2	G	DO												
			Materials Orders	2.1.1	G													

SUBMITTAL REGISTER

CONTRACT NO.
W911WN-05-B-0002

TITLE AND LOCATION
Design of Emergency Bulkheads, Emsworth Dam, Ohio River

CONTRACTOR

						CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION GOVT OR A/E REVWR	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		05055	Materials List	2.1.2	G												
			Shipping Bill	2.1.3	G												
			SD-06 Test Reports														
			Tests, Inspections, and	2.3	G RO												
			Verifications														
			SD-07 Certificates														
			Qualification of Welders and	1.4	G RO												
			Welding Operators														
			Welding of Structural Stainless	2.2.2.1	G RO												
			Steel														
			Welding of Aluminum	2.2.2.2	G DO												
		05502	SD-02 Shop Drawings														
			Shop Fabricated Metal Items	2.2	G DO												
			SD-03 Product Data														
			Miscellaneous Metals and	2.1	G DO												
			Standard Metal Articles														
			Shop Fabricated Metal Items	2.2	G DO												
			SD-06 Test Reports														
			Miscellaneous Metals and	2.1	G DO												
			Standard Metal Articles														
			Shop Fabricated Metal Items	2.2	G DO												
		11295	SD-01 Preconstruction Submittals														
			Welding	3.1.3	G DO												
			SD-02 Shop Drawings														
			Fabrication and Assembly	3.1.1	G DO												
			Drawings														

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CONTRACT NO.
W911WN-05-B-0002

TITLE AND LOCATION
Design of Emergency Bulkheads, Emsworth Dam, Ohio River

CONTRACTOR

						CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION GOVT OR A/E REVWR	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		11295	Delivery Drawings	3.1.1.2	G DO												
			SD-03 Product Data														
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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01380

PROGRESS PHOTOGRAPHS

-- End of Section Table of Contents --

SECTION 01380

PROGRESS PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY

The work under this section includes furnishing progress photographs, consisting of digital photographs showing the progress of the construction operations throughout the contract period.

1.2 GENERAL REQUIREMENTS

1.2.1 Description

The Contractor shall, during the progress of the project (including progress of fabrication), furnish the Contracting Officer progress photographs to depict progress of construction, throughout the life of the contract. The photographs shall be taken using digital photography equipment furnished by the Contractor. Electronic copies of approved photographs shall be furnished on compact disk, or other storage media as approved by the Contracting Officer.

1.2.2 Digital Photographs

Digital photographs shall have a CCD resolution no less than 5.0~~2.1~~ million pixels per image (2592 by 1944~~1792 by 1200~~) which will provide enough detail to print an 8" by 10" photo-realistic photograph. The Contractor shall furnish, using Microsoft Word97 or later version, a file with each set of photographs which lists the following identifying information for each photographic image:

Name and location of project
Contract number
Date taken
Contractor (and subcontractor if applicable)
Orientation of view and brief description of work depicted

Each photograph shall be sequentially numbered. The identifying data shall be placed in the document accompanying the photographs. No identifying data, except the date stamp, shall appear on the photographs.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Thumbnail Hard Copy Prints of Progress Images; G RE.
Glossy Prints of Selected Official Progress Images; G RE.
Electronic Copy of Selected Official Progress Images; G RE.

Electronic Copy of All Other Progress Images; G RE.

Copies of digital progress images in electronic form and hard copy form shall be submitted monthly for approval in accordance with paragraph "PHOTOGRAPHY". Progress images shall be submitted in a timely manner as coordinated with the Contracting Officer.

PART 2 PRODUCTS

2.1 CONTRACTOR-FURNISHED EQUIPMENT

The Contractor shall be responsible for furnishing all photographic equipment to perform the work specified by this section. If the camera becomes unusable for three days or more due to defects in materials or workmanship, the Contractor shall be responsible for furnishing a temporary replacement for the period it is out of service. The Contractor shall furnish the camera equipment within 14 days after receipt of Notice to Proceed. The Contractor shall use a color printer for producing the final, photo-quality, color hard copies of progress images.

2.1.1 Digital Camera

The Contractor shall use a minimum of one digital camera for his use to take the official progress photos for this contract. Progress photos, shall include progress during fabrication. The digital camera shall conform to the following minimum requirements. The camera shall have a CCD resolution no less than 5.0~~2.1~~ million pixels per image (2592 by 1944~~1792 by 1200~~) which will provide enough detail to print an 8" by 10" photo-realistic photograph. The camera shall have the capability to set the exposure settings manually or automatically. The camera shall also have picture overlay capability, which shall allow the user to overlay the time, date, and/or text over the digital image. The camera shall come with software that allows the user to download the images onto an IBM-compatible personal computer running Windows 2000, and allow the images to be saved in one of the following graphic formats: JPG (Joint Photographic Experts Group), TIFF (Tagged Image File Format) or BMP (Windows Bitmap).

PART 3 EXECUTION

3.1 PHOTOGRAPHY

The Contractor shall, during the progress of the fabrication, delivery, and installation of the project, furnish the Contracting Officer digitally produced progress photographs to depict the progress of the work. All progress images shall be taken at the camera's highest resolution. In coordination with the Contracting Officer, one set of progress photographs per month shall be taken over the full duration of this contract. Thumbnail Hard Copy Prints of Progress Images shall be submitted to the Contracting Officer for approval between the first and fifth day of each month. The Contracting Officer will select from the thumbnail views, unless directed otherwise, at least ten views to become official progress images. The selected official progress images shall be printed in color using a photo-quality color laser printer or inkjet printer on glossy photographic paper in 8"x10" format and submitted for approval. Glossy Prints of Selected Official Progress Images, and Electronic Copy of Selected Official Progress Images shall be furnished within ten days of approval of the thumbnail images. Electronic copies shall be furnished on compact disk with file of required photographic information. Electronic Copy of All Other Progress Images (including those not selected) shall be

furnished on separate compact disk with file of required photographic information with the selected official progress images. The first set of progress images shall be taken prior to commencement of fabrication (construction) to show pre-construction conditions. Remaining sets of images shall be taken from when the first piece of equipment is mobilized to the site until final acceptance of work. Digital photographs shall be taken continuously throughout each month in which work is in progress. Unless otherwise directed by the Contracting Officer, photographs will not be required for periods of time in which work is not being performed. Additional sets of photographs shall be taken as directed by the Contracting Officer. Enough digital photographs shall be taken to adequately depict each phase of the work and shall show progress made during those phases and at the completion of the project. Digital photographs shall show work accomplished since the previous photographs. Progress photographs shall be submitted as specified herein and in paragraph "SUBMITTALS". Payments for photographs shall be incidental to the listed lump sum item most closely associated with the work involved.

-- End of Section --

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of Section E INSPECTION AND ACCEPTANCE clause "Inspection of Supplies -- Fixed Price". The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 60 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority, (including a complete fabricator's Quality Control Plan and chart for all work performed during fabrication by the fabricator) and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used unless otherwise acceptable to the Contracting Officer.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction (and fabrication) deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction (or fabrication), and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 30 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of

the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times site activities are on-going during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a construction person with a minimum of five years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered by the Pittsburgh District and sponsored by the Contractors Association of Western Pennsylvania. Completion of the course offered by other Corps of Engineers Districts will be accepted upon presentation of a valid certificate.

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers,

complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the CQC System Manager's work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field during site activities and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the onsite and offsite fabrication work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work including fabrication to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite or offsite at fabrication shop, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements (this includes shop testing). Upon request, the

Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory that is currently validated or establish a Corps of Engineers validated testing laboratory. A current list of Corps of Engineers validated laboratories and respective validated test procedures can be viewed at website http://www.wes.army.mil/SL/MTC/mtc.htm. If a laboratory validated to perform a required test procedure cannot be found at a location convenient for the Contractor, or if there are no validated test procedure listings available, the cost to obtain validation for the required test procedures, which may include laboratory validation, shall be borne by the Contractor. The process of obtaining laboratory/test procedure validation and current monetary charges to obtain validation(s) may be found at the aforementioned website. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, steel, and aluminum shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Capability Recheck

During the life of the contract, the Government reserves the right to check the Contractor’s laboratory equipment and procedures, including the laboratory technician’s procedures and techniques, for compliance with the standards set forth in the contract specifications. If a noted deficiency cannot be corrected within ten (10) working days, the Contractor will be required to have the deficient procedure re-validated at his expense.”

Laboratories utilized for testing soils, concrete, asphalt, steel, and aluminum shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.3 Offsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the fabrication work for each unit, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be utilized by the Government. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection to be onsite. Additional Government personnel including, but not limited to, project personnel and other Government representatives may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with Section E INSPECTION AND ACCEPTANCE

clause "Inspection of Supplies -- Fixed Price".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

c. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

d. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

e. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

f. Offsite surveillance activities, including actions taken.

g. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

h. Instructions given/received and conflicts in plans and/or specifications.

i. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 48 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample Daily Construction Quality Control Report form enclosed at the end of this section.

Shop Fabricated Metal Items; G, DO

Detail drawings shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-03 Product Data

Miscellaneous Metals and Standard Metal Articles; G, DO
Shop Fabricated Metal Items; G, DO

Lists of materials, and records which identify the disposition of approved material and fabricated items in the work, shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-06 Test Reports

Miscellaneous Metals and Standard Metal Articles; G, DO
Shop Fabricated Metal Items; G, DO

Certified test reports for materials tests and analyses shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.3 FABRICATION AND WORKMANSHIP REQUIREMENTS

Fabrication requirements and workmanship provisions for items specified in this section shall conform with the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

PART 2 PRODUCTS

2.1 MISCELLANEOUS METALS AND STANDARD METAL ARTICLES

Miscellaneous metal materials and standard metal articles shall conform to the respective specifications and other designated requirements. Sizes shall be as specified or shown. Where material requirements are not specified, materials furnished shall be suitable for the intended use and shall be subject to approval.

2.1.1 Stainless Steel

2.1.1.1 Plate, Sheet, and Strip

ASTM A 240/A 240M, UNS S30400. Plate finish shall be hot-rolled and annealed or heat treated, and blast cleaned or pickled. Sheet and strip finish shall be No. 1.

2.1.1.2 Bars and Shapes

Stainless steel bars and shapes shall conform to the following as specified or shown:

a. ASTM A 276, UNS S30400 with a maximum carbon content of 0.08 percent, Condition A, hot-finished or cold-finished, Class C.

2.1.1.3 Roller Shapes for Roller Systems

a. Bulkhead Rollers - ASTM A 564/A 564M, UNS S17400 or S45000, age-hardened heat treated to obtain a Brinell hardness range of 331 minimum to 401 maximum, hot-finished or cold-finished, Class C. Heat treatment of rollers and plates shall not commence until the heat treatment procedure and the test reports for other required material tests are approved. After heat treating and final machining, each roller and track plate shall be free of scale and cracks, as determined by magnetic particle, florescent, or dye penetrant inspection tests.

(1) Hardness Check Tests - Suitable 1/2 inch thick samples of the material from each heat shall be tested to determine the hardness in both the solution-annealed and age-hardened conditions. Where the oven-batch heat- treating process is used, hardness check tests shall be performed on material of each heat in each oven batch. Where a continuous heat-treating process is used, three check tests shall be performed on material of each heat: one on the first material through the process, one at the middle of the run, and one on the last material through the process.

b. Bulkhead Roller Pins & Axles

(1) Pins - ASTM A 276, UNS S21800, Condition A, cold-finished or hot-rolled and machine-finished to the tolerances specified in ASTM A 484/A 484M for cold-finished round bars, Class C. Machined pins should have a surface roughness of not exceeding 63 microinches.

2.1.2 Aluminum

2.1.2.1 Sheets and Plates

ASTM B 209, Alloy 6061, Temper T6.

2.1.2.2 Bars, Rods and Wire

ASTM B 211, Alloy 6061, Temper T6.

2.1.2.3 Structural Shapes

ASTM B 308/B 308M, Alloy 6061, Temper T6.

2.1.3 Bronze

2.1.3.1 Aluminum Bronze Castings

a. 6-inch Roller Bushings: ASTM B 148, Copper Alloy UNS No. C95500 as required by manufacturer and approved by Contracting Officer.

2.1.4 Bolts, Nuts, and Washers

Bolts, nuts, and washers shall be of the material, grade, type, class, style and finish indicated or best suited for intended use.

2.1.4.1 Bolts, Nuts, and Washers (Fastening Aluminum to Aluminum)

a. Bolts - ASTM F 593, F593G or F593H, Group 2 316, Condition CW.

b. Nuts - ASTM F 594, F594G or F594H, Group 2 316, Condition CW.

c. Washers

(1) Plain Washers - ASTM A 240/A 240M, 316.

(2) Beveled Washers - As required by AA ADM 1.

2.1.4.2 Bolts, Nuts, and Washers (Fastening Stainless Steel to Aluminum or Stainless Steel)

a. Bolts - ASTM F 593, F593G or F593H, alloy group 2, 316, Condition CW.

b. Nuts - ASTM F 594, F594G or F594H, alloy group 2, 316, Condition CW.

c. Washers - ASTM A 240/A 240M Type 316.

2.1.5 Screws

Screws shall be of the material, grade, type, style, and finish indicated or best suited for use intended.

2.2 SHOP FABRICATED METAL ITEMS

Shop fabricated metal items shall conform to the requirements and details as specified or shown and to the workmanship provisions and other applicable fabrication requirements as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.1 Wheels

Wheels shall be rigid type, heavy duty stainless steel casters. Wheels shall be of the size shown. Wheels shall be provided with lubrication fittings, roller bearings, and removable axle or shaft. Wheel treads shall be machined-finished as shown. Unless otherwise specified or shown, shafts for wheels shall be stainless steel.

PART 3 EXECUTION (Not Applicable)

-- End of Section --

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DIVISION 11 - EQUIPMENT

SECTION 11295

BULKHEADS AND ACCESSORIES

-- End of Section Table of Contents --

SECTION 11295

BULKHEADS AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

This Section of the Specifications outlines the requirements for new bulkheads and accessories. Coordination of design of seals and mechanical rollers and installation of the work of various trades shall be the responsibility of the Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

SECTION 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS

SECTION 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A 276	(2003) Stainless Steel Bars and Shapes
ASTM D 2240	(2000) Rubber Property-Durometer Hardness
ASTM D 395	(1998) Rubber Property - Compression Set
ASTM D 412	(1998a) Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastometers - Tension
ASTM D 471	(1998el) Rubber Property - Effect of Liquids

1.4 GENERAL DESCRIPTION

The bulkheads shall be of bolted structural aluminum fabrication with skin plate and rubber seals. The seal seats shall be of stainless steel or aluminum as indicated and are part of the bulkhead frames. Each bulkhead shall be provided with a total of twelve (12) rollers. Six (6) rollers at each end, to guide the bulkhead in each bulkhead slot and prevent it's jamming in the slot.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office

that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Welding; G DO.

Schedules of welding procedures for structural aluminum shall be submitted as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-02 Shop Drawings

Fabrication and Assembly Drawings; G DO.

Detail drawings, except delivery drawings, shall be provided by the Government. Deviations from the provided detail drawings, ~~and delivery drawings~~ shall be submitted as specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS for the bulkheads.

Deviations of detail drawings shall include fabrication drawings and assembly drawings. ~~Contractor supplied shop drawings shall include delivery drawings.~~

a. Fabrication Drawings. These drawings shall show complete details of each piece of the structural unit that identifies the material(s), tolerances, connections, machined surface finishes, and proposed welding sequences which clearly differentiate shop welds and field welds. Each piece shall be mark numbered and matched to an assembly drawing showing the overall assembly of the structural unit including details of the connections. Fabrication drawings shall include drawings that present bills of materials (i.e. material schedules) that tabulates each piece, quantity and weights. Fabrication drawings shall also include general notes related to fabrication.

b. Assembly Drawings. These drawings will present plan, elevation, and detail views of the bulkhead units and pickup frame so that it is clearly understood how each (mark numbered) piece (as shown on the fabrication drawings) is incorporated into the unit.

~~c. Delivery Drawings. These drawings shall provide descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.~~

Deviations of detail drawings ~~and delivery drawings~~ shall be submitted to the Contracting Officer for review a minimum of ~~60~~15 days prior to ordering materials. No materials shall be ordered until detail drawings are approved by the Contracting Officer.

Delivery Drawings; G DO

a. Delivery Drawings. These drawings shall provide descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.

Delivery Drawings shall be supplied by the Contractor and shall be

submitted as specified herein. Delivery drawings shall be submitted to the Contracting Officer for review a minimum of 15 days prior to ordering materials. No materials shall be ordered until delivery drawings are approved by the Contracting Officer.

SD-03 Product Data

Materials; G RO

Materials orders, materials lists and materials shipping bills shall be submitted as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-06 Test Reports

Tests, Inspections, and Verifications; G DO

Certified test reports for material tests shall be submitted with all materials delivered to the site.

SD-07 Certificates

Weight Certificate; G

Certified weight report for each of the four(4) entirely assembled bulkheads prior to transporting to project site.

1.6 QUALIFICATION OF WELDERS AND WELDING OPERATORS

Qualification of welders and welding operators shall conform to the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.7 DELIVERY, STORAGE, AND HANDLING

Delivery and handling of materials and fabricated items shall conform to the requirements specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.7.1 Rubber Seals

Rubber seals shall be stored in a place which permits free circulation of air, maintains a temperature of 70 degrees F or less, and prevents the rubber from being exposed to the direct rays of the sun. Rubber seals shall be kept free of oils, grease, and other materials which would deteriorate the rubber. Rubber seals shall not be distorted during handling.

PART 2 PRODUCTS

2.1 MATERIALS

Materials orders, materials lists, and materials shipping bills shall conform with the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.1.1 General Purpose Corrosion Resistant Steel

ASTM A 276, UNS S30400 with a maximum carbon content of 0.08 percent,

Condition A, hot-finished or cold-finished, Class C..

2.1.2 Rollers

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.1.3 Corrosion Resistant Aluminum and Stainless Steel Bolts and Nuts

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS, paragraphs "Bolts, Nuts, and Washers (Fastening Aluminum to Aluminum)", "Bolts, Nuts, and Washers (Fastening Stainless Steel to Aluminum or Stainless Steel)", and "Screws".

2.1.4 Roller Axles and Roller Pins

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.1.5 Miscellaneous Pins

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.1.6 Aluminum Bronze Bushings

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.1.7 Rubber Seals

Rubber seals (J-seals and Omega seals) shall be flouro-carbon (Teflon) clad rubber seals of the mold type only, shall be compounded of neoprene, or copolymer of butadiene and styrene, or a blend of both. Physical characteristics of the seals shall meet the following requirements:

PHYSICAL TEST	TEST VALUE	TEST METHOD SPECIFICATION
Tensile Strength	2000 psi (min.)	ASTM D 412
Elongation at Break	450% (min.)	ASTM D 412
300% Modulus	900 psi (min.)	ASTM D 412
Durometer Hardness (Shore Type A)	50 to 60	ASTM D 2240
*Water Absorption	5% by weight (max.)	ASTM D 471
Compression Set	30% (max.)	ASTM D 395

* The "Water Absorption" test shall be performed with distilled water. The washed specimen shall be blotted dry with filter paper or other absorbent material and suspended by means of small glass rods in the oven at a temperature of 70 degrees +/- 2 degrees C for 22 +/- 1/4 hour. The specimen shall be removed, allowed to cool to room temperature in air, and weighed. The weight shall be recorded to the nearest 1 mg as W1 (W1 is

defined in ASTM D 471). The immersion temperature shall be 70 degrees +/-1 degree C and the duration of immersion shall be 166 hours.

2.1.7.1 Fabrication

Rubber seals shall have a flouro-carbon film vulcanized and bonded to the sealing surface of the bulb. The film shall be 0.060 inch thick Huntington Abrasion Resistant Flouro-Carbon Film No. 4508, or equal, and shall have the following physical properties:

Tensile strength .....2,000 psi (min.)

Elongation.....250 percent (min.)

The outside surface of the bonded film shall be flush with the surface of the rubber seal and shall be free of adhering or bonded rubber. Strips and corner seals shall be molded in lengths suitable for obtaining the finish lengths shown on the drawings and with sufficient excess length to provide test specimens for testing the adequacy of the adhesion bond between the film and bulb of the seal. At one end of each strip or corner seal to be tested, the flouro-carbon film shall be masked during bonding to prevent a bond for a length sufficient to hold the film securely during testing.

2.2 MISCELLANEOUS ITEMS

Miscellaneous items and Materials not otherwise specified herein shall conform to the applicable requirements of Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

PART 3 EXECUTION

3.1 FABRICATION

3.1.1 Detail Drawings

Deviations of detail drawings, including Fabrication and Assembly Drawings, shop assembly drawings, delivery drawings, and field installation drawings, shall conform to the requirements specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.1.1.1 Fabrication and Assembly Drawings

Deviations of fabrication drawings shall show complete details of materials, tolerances, connections, machined surface finishes, and proposed welding sequences which clearly differentiate shop welds and field welds. Deviations of shop assembly drawings shall provide details for connecting the adjoining fabricated components in the shop to assure satisfactory field installation.

3.1.1.2 Delivery Drawings

Delivery drawings shall provide descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.

3.1.2 Structural Fabrication

Structural fabrication shall conform with the requirements shown on the drawings and specified herein and in Section 05055 METALWORK FABRICATION,

MACHINE WORK, MISCELLANEOUS PROVISIONS. Components shall be shop-fabricated of the materials specified and shown on the drawings. Dimensional tolerances shall be as specified and shown on the drawings. Splices, if required, shall occur only where shown on the drawings or approved by the Contracting Officer. The entire bulkhead shall be shop assembled and, if required, disassembled at splice locations for field reassembly. Bolt holes shall be bored in components after clamping and straightening are completed. Brackets and other components requiring straightening shall be straightened by methods which will not damage the material. Bronze bushings shall be press-fitted with supporting components. Bolt connections, lugs, clips, or other pick-up assembly devices shall be provided for components as shown and required for proper assembly and installation. Provisions shall be made for the installation of appurtenances as required.

3.1.3 Welding

Welding shall conform with the requirements specified herein, and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Welds shall only be where and of the type shown on the contract drawings and approved detail drawings. Nondestructive examination is required on the major shop welds of the types as follows:

a. One hundred percent (100%) visual

3.1.4 Bolted Connections

Bolted connections shall conform with the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.1.5 Machine Work

Machine work shall conform with the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.1.6 Miscellaneous Provisions

Miscellaneous provisions for fabrication shall conform with the requirements specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.1.7 Fabrications

3.1.7.1 Bulkheads

Bulkheads shall be of bolted fabrication as shown on the drawings. Structural fabrication shall conform to the requirements as shown and specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Dimensional tolerances shall be as specified and as shown. Splices shall occur only where shown. Bulkhead units shall be shop-fabrication in one piece. The Contractor shall obtain and submit a certified Weight Certificate for each of the completely fabricated bulkheads prior to any transportation or shipping for delivery to the project site. Fabrication in separate segments without shop assembly will not be permitted. The Contractor shall prepare and execute a bolting sequence for the shop bolting of the bulkheads, which, in conjunction with the joint bolting procedures and overall fabrication methods, will control distortion to produce a completed assembly meeting the quality requirements and tolerances specified. Bulkheads shall be provided with seal assemblies

and other appurtenant items as shown on the drawings. The Contractor shall lift each of the completely fabricated bulkheads from the lifting assembly in the shop to establish the center of gravity of the bulkhead. When lifted ~~T~~the bulkhead shall not vary from plumb by more than 1/8" over the height of the bulkhead. The Contractor shall fasten additional aluminum material (ballast) as necessary to achieve the desired center of gravity within tolerances specified. Weight Certificate shall be obtained after the addition of any required ballast.

3.1.7.2 Bulkhead Skin Plates

The outside surfaces of skin plates bolted to framing elements shall not vary from a true plane by more than 1/16 inch. Splices in skin plates shall be located only where shown. The overall width and height of the fabricated bulkhead shall not vary from the respective dimensions shown by more than 1/16 inch.

3.1.7.3 Bulkhead Frame and Guides

Exposed unmachined surfaces of bulkhead frames shall match at joints between component parts, shall not depart from true planes shown by more than 1/16 inch, and shall be free of offsets or irregularities greater than 1/16 inch.. Allowable offsets or irregularities less than 1/16 inch shall be ground to a bevel of not greater than one on twenty four. Installation shall maintain surface straightness to within 1/8 inch overall in both plan dimensions.

3.1.8 Shop Assembly

Shop assembly requirements for bulkheads shall be as shown on the drawings and specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Rubber seals shall be fitted and drilled to match the seal clamping bars, match-marked and then removed for shipment. Shop assembly shall include the attachment of all accessories to the each bulkhead. If the bulkhead is out of plumb when lifted by more than 1/8~~16~~ inch in the total length in a vertical plane in the upstream-downstream direction, or by more than 1/8~~16~~ inch in the total width in a vertical plane perpendicular to the vertical plane in the upstream-downstream direction, it shall be balanced by counterweighting or some other method as approved at the Contractor's expense. Shop assembly and disassembly work shall be performed in the presence of the Contracting Officer unless otherwise waived in writing by the Contracting Officer. The presence of the Contracting Officer during assembly or disassembly will not relieve the Contractor of any responsibility under this contract.

3.1.8.1 Wheel Assemblies

The bulkhead wheel assemblies shall be products of a manufacturer regularly engaged in the manufacture of such products. Each wheel assembly shall be provided complete with wheel, shaft, roller bearing, lock washer, lock nut, bearing cover, seal housing, grease seal, seal retainer, shaft lock plate, lubrication fittings, fasteners, and other accessories as required for complete and proper installation. Wheel diameter and thickness shall not be changed from that shown. The dimensions and tolerances of other components may be changed as required for compatibility with the manufacturer's product.

3.1.8.2 Seal Assemblies

The bulkhead seal assemblies shall consist of rubber seals, stainless steel retainer and spacer bars, and fasteners. Rubber seals shall be continuous over the full length. Seals shall be accurately fitted and drilled for proper installation. Bolt holes shall be drilled in the rubber seals by using prepared templates or the retainer bars as templates. Splices in seals shall be fully molded, develop a minimum tensile strength of 50 percent of the unspliced seal, and occur only at locations shown. All vulcanizing of splices shall be done in the shop. The vulcanized splices between molded corners and straight lengths shall be lcoated as close to the corners as practicable. Splices shall be on a 45 degree bevel related to the "thickness" of the seal. The surfaces of finished splices shall be smooth and free of irregularities. Stainless steeel retainer bars shall be field-spliced only where shown and machine finished after splicing.

3.2 TESTS, INSPECTIONS, AND VERIFICATIONS

Tests, inspections, and verifications for materials shall conform to the requirements specified herein and in Section 05055 METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS. Shop assembled components shall be inspected for accurate fit and compliance with dimensional tolerances. Sealing, guiding, and connecting surfaces shall be inspected to determine if their planes are true, parallel, and in uniform contact with opposing surfaces.

3.2.1 Acceptance Trial Operation

The Contracting Officer will examine the bulkheads for final acceptance. The bulkheads will be examined first to determine whether or not the workmanship conforms to the specification requirements. Final acceptance of the bulkheads will not be made until the Government has operated the bulkheads in service. The Government will operate the bulkheads from the fully-raised to the fully-lowered position a sufficient number of times in different bays as selected by the Contracting Officer to demonstrate to the Contracting Officer's satisfaction that there is no binding, and that sealing surfaces do not leak. The workmanship shall be such that the bulkheads in the lowered position will form a watertight barrier across the opening. Required repairs or replacements to correct defects, as determined by the Contracting Officer, shall be made at no cost to the Government. The trial operation shall be repeated after defects are corrected.

3.3 PROTECTION OF FINISHED WORK

Protection of finished work shall conform to the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

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